

## **REMARKS**

By this Amendment, Applicants amend claims 1, 6, 8, 13, 15, 20, and 22 to more appropriately describe the present invention. Applicants also cancel claims 2, 3, 7, 9, 10, 14, 16, 17, 21, 23, 31, and 32 without prejudice or disclaimer of the subject matter thereof; and add claims 37-43 to address other aspects of the present invention. Upon entry of this Amendment, claims 1, 4-6, 8, 11-13, 15, 18-20, 22, 24-26, 28-30, 34, 35, and 37-43 will be pending.

In the Final Office Action mailed on October 21, 2004, the Examiner rejected claims 1, 4, 8, 11, 15, 18, and 22 under 35 U.S.C. § 103(a) as unpatentable over U.S. Patent No. 5,642,431 to Poggio et al. (hereinafter "Poggio") in view of U.S. Patent No. 6,445,812 to Lai et al. (hereinafter "Lai"); rejected claims 2, 3, 9, 10, 16, 17, and 23-26 under 35 U.S.C. § 103(a) as unpatentable over Poggio in view of Lai and further in view of U.S. Patent No. 6,148,092 to Qian; rejected claims 5, 6, 12, 13, 19, and 20 under 35 U.S.C. § 103(a) as unpatentable over Poggio in view of Lai, and further in view of U.S. Patent No. 4,975,970 to Zettel et al. (hereinafter "Zettel"); rejected claims 28, 31, and 34 under 35 U.S.C. § 103(a) as unpatentable over Poggio in view of Zettel; rejected claims 7, 14, and 21 under 35 U.S.C. § 103(a) as unpatentable over Poggio in view of Lai and Zettel, and further in view of Qian; and rejected claims 29, 32, and 35 under 35 U.S.C. § 103(a) as unpatentable over Poggio in view of Zettel, and further in view of Qian. Applicants respectfully traverse the Examiner's rejections under 35 U.S.C. § 103(a).

### **Regarding Claim Rejections**

Applicants respectfully traverse the Examiner's rejection of claims 1, 4, 8, 11, 15, 18, and 22 under 35 U.S.C. § 103(a) as unpatentable over Poggio in view of Lai. In order to establish a *prima facie* case of obviousness, three basic criteria must be met.

First, the prior art reference (or references when combined) must teach or suggest all the claim elements. Second, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify a reference or to combine reference teachings. Third, there must be a reasonable expectation of success. See M.P.E.P. § 2143.

Claim 1, as amended, recites a combination including, for example, “determining a surface fitting based on the face region for the image using a linear model, wherein the surface fitting is determined using only the skin color pixels of the face region.” Poggio fails to teach or suggest at least “determining a surface fitting based on the face region for the image using a linear model, wherein the surface fitting is determined using only the skin color pixels of the face region,” as required by amended claim 1.

Poggio discloses a method for processing a face pattern. In Poggio, “the outermost pixels at the corners of this 19x19 format window are masked out 403 as corresponding to background that is not relevant to the face detection task and that, accordingly, should not be encoded.” Poggio, column 9, lines 41-44, emphasis added. “An illumination gradient correction 404 is then applied . . . by subtracting a best-fit brightness plane from the unmasked window pixels.” Poggio, column 9, lines 44-50, emphasis added. However, a 19x19 format window with the outmost pixels at the corners of the window masked out does not constitute “the face region for the image,” as recited in amended claim 1.<sup>1</sup> Moreover, Poggio does not teach or suggest “the surface fitting is determined using only the skin color pixels of the face region.”

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<sup>1</sup> Claim 1, as amended, also recites “determining a face region based on skin color pixels, wherein the skin color pixels are determined based on intensity and chrominance color of the pixels.” (emphasis added.)

Therefore, Poggio fails to teach or suggest at least “determining a surface fitting based on the face region for the image using a linear model, wherein the surface fitting is determined using only the skin color pixels of the face region,” as required by amended claim 1.

Lai fails to cure Poggio's deficiencies. Lai discloses an illumination compensation system for industrial inspection including a surface fitting processor. “In a surface fitting processor a process is subsequently applied to estimate the logarithmic irradiance function.” Lai, column 2, lines 4-13, emphasis added. However, Lai's teaching of the logarithmic irradiance function does not constitute a teaching of “determining a surface fitting based on the face region for the image using a linear model, wherein the surface fitting is determined using only the skin color pixels of the face region,” as required by amended claim 1.

Therefore, neither Poggio nor Lai, taken alone or in any reasonable combination, teaches or suggests all the claim elements recited in the amended claim 1. A *prima facie* case of obviousness cannot be established on claim 1. Regarding the Examiner's comment “however, Poggio's entire disclosure is directed to processing a face image (see Poggio, figure 1), so it is not clear how Poggio does not determine . . . based on the face image,” (Office Action, Response to Amendments and Arguments, page 2), Applicants respectfully submit that, as explained above, “a face image” in Poggio does not constitute “a face region” which is “determined based on skin color pixels,” as recited in the claims.

Accordingly, Applicants respectfully request withdrawal of the rejection of claim 1. Since claim 4 depends on claim 1, Applicants also request withdrawal of the rejection of claim 4 for at least the same reasons stated above.

Independent claims 8, 15, and 22, while of different scope, recite language similar to claim 1. Claims 8, 15, and 22 are therefore nonobvious over Poggio in view of Lai for at least the same reasons stated above. Applicants respectfully request withdrawal of the rejection of claims 8, 15, and 22. Further, since claim 11 depends on claim 8 and claim 18 depends on claim 15, Applicants also request withdrawal of the rejection of claims 11 and 15 for at least the same reasons stated above.

Applicants also respectfully traverse the Examiner's rejection of claims 2, 3, 9, 10, 16, 17, and 23-26 under 35 U.S.C. § 103(a) as unpatentable over Poggio in view of Lai and further in view of Qian. Since claims 2, 3, 9, 10, 16, 17, and 23 have been canceled, the rejection of claims 2, 3, 9, 10, 16, 17, and 23 is therefore moot.

Claim 24 recites a combination including, for example, "determining a surface fitting for the image using a linear model, wherein the surface fitting is determined using only the pixels that were determined to be part of the face region." As explained above, Poggio and Lai fail to teach or suggest at least "determining a surface fitting for the image using a linear model, wherein the surface fitting is determined using only the pixels that were determined to be part of the face region," as required by claim 24.

(emphasis added.)

Qian fails to cure Poggio and Lai's deficiencies. Qian teaches a method to determine a face region based on whether or not a particular pixel is a skin tone. See Qian, col. 4 lines 24-40. However, Qian does not teach or suggest "determining a

surface fitting for the image using a linear model, wherein the surface fitting is determined using only the pixels that were determined to be part of the face region,” as recited in claim 24.

Thus, none of Poggio, Lai, and Qian, taken alone or in any reasonable combination, teaches or suggests all the claim elements recited in claim 24. Claim 24 is therefore nonobvious over Poggio in view of Lai, and further in view of Qian.

Accordingly, Applicants respectfully request withdrawal of the rejection of claim 24.

Claims 25 and 26, while of different scope, recite language similar to claim 24. Claims 25 and 26 are therefore also nonobvious over Poggio in view of Lai, and further in view of Qian for at least the same reasons stated above. Applicants thus also request withdrawal of the rejection of claims 25 and 26.

Applicants also respectfully traverse the Examiner’s rejection of claims 5, 6, 12, 13, 19, and 20 under 35 U.S.C. § 103(a) as unpatentable over Poggio in view of Lai and further in view of Zettel. Claims 5-6, 12-13, and 19-20 depend on independent claims 1, 8, and 15, respectively, either directly or indirectly. As explained above, Poggio and Lai fail to suggest or teach at least “determining a surface fitting based on the face region for the image using a linear model, wherein the surface fitting is determined using only the skin color pixels of the face region,” as required by amended claims 1, 8, and 15.

Zettel fails to cure Poggio and Lai’s deficiencies. Zettel discloses a “use of an image pixel histogram” to facilitate “automatic brightness and contrast approximation of operator preference and elimination of undesired background information” in NMR imaging. Zettel, column 3, lines 49-53. In Zettel, “any portion of the image can be considered as background (and hence ignored) [in histogram calculation],” and “it is

assumed that background pixels are darker (i.e., have a smaller magnitude).” Zettel, column 3, lines 61-68, emphasis added. However, Zettel does not teach or suggest at least “determining a surface fitting based on the face region for the image using a linear model, wherein the surface fitting is determined using only the skin color pixels of the face region,” as required by amended claims 1, 8, and 15.

Therefore, none of Poggio, Lai, and Zettel, taken alone or in any reasonable combination, teaches or suggest all claim elements recited in claims 1, 8, and 15. Claims 1, 8, and 15 are therefore nonobvious over Poggio in view of Lai, and further in view of Zettel. Since claims 5-6, 12-13, and 19-20 depend on claims 1, 8, and 15, respectively, either directly or indirectly, claims 5-6, 12-13, and 19-20 are also nonobvious over Poggio in view of Lai, and further in view of Zettel. Accordingly, Applicants respectfully request withdrawal of the rejection of claims 5-6, 12-13, and 19-20.

Applicants also respectfully traverse the Examiner’s rejection of claims 28, 31, and 34 under 35 U.S.C. § 103(a) as unpatentable over Poggio in view of Zettel. Since claim 31 has been canceled, the rejection of claim 31 is therefore moot.

Claims 28 and 34 recite combinations including, for example, “computing an average gray level for the plurality of pixels in the image using only the pixels that are determined to be part of the face region.” Under reasoning similar to that set forth above regarding claim 1, neither Poggio nor Zettel teaches or suggests “computing an average gray level for the plurality of pixels in the image using only the pixels that are determined to be part of the face region,” as required by claims 28 and 34. Accordingly, Applicants respectfully request withdrawal of the rejection of claims 28 and 34.

Applicants also respectfully traverse the Examiner's rejection of claims 7, 14, and 21 under 35 U.S.C. § 103(a) as unpatentable over Poggio in view of Lai and Zettel, and further in view of Qian. Since claims 7, 14, and 21 have been canceled, the rejection of claims 7, 14, and 21 is therefore moot.

Applicants also respectfully traverse the Examiner's rejection of claims 29, 32, and 35 under 35 U.S.C. § 103(a) as unpatentable over Poggio in view of Zettel, and further in view of Qian. Since claim 32 has been canceled, the rejection of claim 32 is therefore moot. Claims 29 and 35 depend on independent claims 28 and 34, respectively.

As explained above, neither Poggio nor Zettel teaches or suggests "computing an average gray level for the plurality of pixels in the image using only the pixels that are determined to be part of the face region," as required by claims 28 and 34. Qian fails to cure Poggio and Zettel's deficiencies. Qian discloses a method to determine whether a pixel of an image is within the skin tone region based on "'pure' colors in the absence of brightness." Qian, column 3, lines 62-63, emphasis added. Qian explicitly states that "brightness [or intensity] is not important for characterizing skin colors . . . ." Qian, column 3, lines 58-59. Thus, Qian's teaching does not constitute a teaching of "computing an average gray level for the plurality of pixels in the image using only the pixels that are determined to be part of the face region," as required by claims 28 and 34.

Thus, none of Poggio, Zettel, and Qian, taken alone or in any reasonable combination, teaches or suggest all claim elements recited in claims 28 and 34. Claims 28 and 34 are therefore nonobvious over Poggio in view of Zettel, and further in view of

Qian. Since claims 29 and 35 depend on claims 28 and 34, respectively, claims 28 and 34 are also nonobvious over Poggio in view of Zettel, and further in view of Qian. Accordingly, Applicants respectfully request withdrawal of the rejection of claims 28 and 34.

#### **Regarding New Claims**

Applicants add claims 37-43 to address other aspects of the present invention. Support for claims 37-43 may be found at, for example, pages 13 and 19 of the specification. For at least the reasons stated corresponding to claim 1, claims 37-43 are neither anticipated nor rendered obvious by the prior art of record.

#### **Conclusion**

In view of the foregoing amendments and remarks, Applicants respectfully request entry of this Amendment, reconsideration and reexamination of this application, and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW,  
GARRETT & DUNNER, L.L.P.

Dated: November 23, 2004

By:   
Wenye Tan  
Reg. No. 55,662